

CLAIMS

1. A surgical kit for hip replacement comprising:
5 a prosthetic femoral head and a reamer,
said reamer being adapted to ream a socket into an acetabulum until the cancellous bone is exposed,
the femoral head having a size and shape complementary to the reamer such that the femoral head can be fitted closely and directly into a reamed
10 acetabulum whereby liquid between the femoral head and the socket will be subjected to a hydrostatic pressure in the range of 0.01-5MPa.
2. A surgical kit according to Claim 1, wherein the hydrostatic pressure is in the
15 range 0.5-2MPa.
3. A surgical kit according to Claim 2, wherein the hydrostatic pressure is 2MPa.
4. A surgical kit according to Claim 1, wherein a membrane or spacers are
20 provided which in use space apart the surface of the femoral head and the reamed acetabulum.
5. A surgical kit according to Claim 2, wherein the membrane or spacers are of
25 resorbable material.
6. A surgical kit according to any one of the preceding claims wherein the surface of the femoral head is formed from a material adapted to deform and so sustain the hydrostatic pressure.
- 30 7. A surgical kit according to any one of the preceding claims wherein one or more of the femoral head, spacers and membrane is adapted to deliver growth factors, stem cells, chondrocytes or fibroblasts to the liquid.
8. A surgical kit according to any one of the preceding claims wherein the size
35 (radius of curvature) of the reamer (ie cutting envelope of the reamer) is at most

approximately 5mm greater than that of the femoral head so that the clearance between the femoral head and acetabulum is 5mm or less.

- 5 9. A surgical kit for hip replacement comprising:
 a prosthetic femoral head and a reamer,
 said reamer being adapted to ream a socket into a acetabulum until the
 cancellous bone is exposed,
 the femoral head having a size and shape complementary to the reamer
10 such that the femoral head can be fitted closely and directly into a reamed
 acetabulum, the size (radius of curvature) of the reamer (ie cutting envelope of the
 reamer) being at most approximately 5mm greater than that of the femoral head so
 that the clearance between the femoral head and acetabulum is 5mm or less.
- 15 10. A method for hemiarthroplasty of a hip joint comprising providing a prosthetic
 femoral head and a reamer, and using the reamer to ream a socket into an
 acetabulum until the cancellous bone is exposed, the femoral head having a size
 and shape closely complementary to the reamer, and fitting the femoral head
 directly into the reamed acetabulum.
- 20 11. A method for hemiarthroplasty of a hip joint comprising providing a prosthetic
 femoral head and a reamer, and using the reamer to ream a socket into an
 acetabulum until the cancellous bone is exposed, the femoral head having a size
 and shape closely complementary to the reamer, and fitting the femoral head
25 directly into the reamed acetabulum, the configuration being such that liquid
 between the femoral head and the socket will be subjected to a hydrostatic pressure
 in the range of 0.01-5MP to stimulate formation of new cartilage between the bone
 and femoral head.
- 30 12. A minimally-invasive reaming procedure for joint refurbishment of a ball and
 socket anatomical joint such a hip joint, comprising forming an access tunnel
 through the ball part of the joint, providing a modular shell reamer having a
 separable substantially part-spherical head and a shaft , and introducing the shaft of
 the reamer through the tunnel, introducing the reamer head separately and coupling
35 the inserted end of the reamer shaft to the reamer head in situ, the reamer head,
 having reamer cutting teeth facing not only outwardly toward the socket surface but

also inwardly toward the ball surface, and manipulating the reamer to ream both the socket surface and the ball surface.

13. A modular shell reamer for joint refurbishment of a ball and socket anatomical joint such as a hip joint, having a shaft and a substantially part-spherical head separable from the shaft but capable of being securely coupled to the shaft in situ for use, the reamer head having reamer cutting teeth facing not only outwardly toward the socket surface in use but also inwardly toward the ball surface
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